Website Accessibility:

A Study of ADA Compliance

A Working Paper

Submitted by:
Emily Jackson-Sanborn
Kerri Odess-Harnish
Nikki Warren
May 30, 2001

Questions and comments should be directed to Emily Jackson Sanborn at jacke@ils.unc.edu

Introduction

On an average day over 59 million Americans access the Internet[1] for some form of information seeking behavior, and it is estimated that 106 million Americans[2] use the Internet on a regular basis.   In this new "information age" a large amount of our information is accessed and transmitted through the Internet, and access to this information can mean access to power. But many people do not have clear access to this information because of their physical handicaps. Computers started out as a way to close the gap between those who live with physical handicaps and those who do not. But as more information is stored and transmitted through the Internet, this gap is again widening because of Website design.

The Census Bureau estimated in 1997 that one in five Americans lives with a disability of some kind, where the percentage of those having difficulty in hearing being about 64%, and those with difficulty seeing being 43%.[3] These are the types of disabilities that are most affected by Website design, although people who cannot easily use a mouse also figure into this equation.

While some of the problems can be compensated for through computer modifications, site design can still get in the way. For instance, blind people often use software called a "screen reader" which sorts through the HTML code and conveys the information held on the site. It does this by reading much of the internal text, image descriptions, and link information out loud. If the site creator has neglected to include this information in their design, the screen reader might read "image, image, link, link, link." This can be overwhelmingly frustrating if images and links make up most of a site; the user is missing crucial information.

---

[1] Pew Internet & American Life Project Survey November-December 2000. 27 April 2001.
<http://www.pewinternet.org/reports/chart.asp?img=6_daily_activities.jpg>.
[2] Pew Internet & American Life Project Suvey November-December 2000. 27 April 2001.
<http://www.pewinternet.org/reports/chart.asp?img=6_internet_activities.jpg>.
[3] Census brief: disabilities affect one-fifth of all Americans. 27 April 2001.
<http://www.census.gov/hhes/www/disability.html>.

In 1990, the Americans With Disabilities Act was signed into law to "establish a clear and comprehensive prohibition of discrimination on the basis of disability."[4] However, due to the date of its conception, the language of this Act is unclear as to how it relates to cyberspace. Clearly, however, the Act does apply to cyberspace for in 1996 the US Department of Justice, in responding to his inquiry on behalf of a constituent, delivered a letter to Senator Tom Harkin of Iowa clearly stating that the ADA also applies to the Internet.

> Covered entities under the ADA are required to provide effective communication, regardless of whether they generally communicate through print media, audio media, or computerized media such as the Internet. Covered entities that use the Internet for communications regarding their programs, goods, or services must be prepared to offer those communications through accessible means as well.[5]

Still, "there are no legal parameters that clearly define what makes a Web site ADA-compliant."[6] Also, under the original ADA "covered entities" included all businesses with more than 15 employees. There is still some debate about who is considered a "covered entity" in the private sector as far as the Internet is concerned, and some test law suits are currently underway, one of the most notorious being the National Federation of the Blind vs. America Online (AOL) which was eventually settled out of court by AOL agreeing to make its services accessible.[7] So there would be no confusion in terms of the federal government's role, in 1998 Section 508 of the ADA went into effect requiring all federal agencies to make their Web pages accessible to those with disabilities, and offering suggestions on how to do this. As of June 21, 2001, all government acquisitions of electronic and information technology must be ADA compliant, however the question of already existing technology seems to be unanswered. Several sites have

---

[4] Americans with Disabilities Act. 26 July 1990. US Department of Justice. 27 April 2001. http://www.usdoj.gov/crt/ada/pubs/ada.txt.
[5] Deval L. Patrick, Assistant Attorney General, Civil Rights Division. Letter to Senator Tom Harkin. 9 September 1996. US Department of Justice. http://www.usdoj.gov/crt/foia/cltr204.txt.
[6] Jonathan Quinn, "Making Sites Accessible to the Whole Wide World." The National Law Journal 22.11 (Nov. 8, 1999): B14.
[7] AOL avoids lawsuit from blind users. 27 April 2001. <http://www.cnn.com/2000/TECH/computing/07/28/aol.unseen.idg/>.

been set up to address exactly what federal government sites must do, and when, and none seem to have complete answers.[8]

It seems likely that any business or group that puts out information on the Internet, and who falls under the original ADA, will need to ensure their Website is accessible to all. And even if this does not come to pass quickly with legal ramifications, information on a website, unless a site is password protected, is meant to be viewed by others. It only makes sense to make sure it can be viewed by all of the people who visit the site.

The design modifications that need to be in place for universal accessibility are outlined on the W3C Website.[9] They are relatively easy to implement and find. In a nutshell, the guidelines say that if a message or information is conveyed through color, sound, or images that an alternate description is placed in the HTML code that the screen readers can read. Also, if tables are used for layout purposes, row and column headings should be used to give direction to the readers. One easy way to discover if your site is accessible is to run it through screening software such as Center for Applied Special Technology (CAST) "Bobby". At Bobby's website (http://www.cast.org/bobby), the user types in the URL and submits the page to Bobby which then checks it for accessibility errors. A detailed report is generated that gives the types of errors, how many times each error occurs, and where they occur in the page. There are different levels of accessibility: Priority 1-3. Priority 1 is considered the most important because these seriously affect a site's usability by people with disabilities, Priority 2 should be dealt with next, and Priority 3 after that. For a page to be considered "Bobby approved," and thus earn the right to display the Bobby icon, it must pass all Priority 1 level errors and user checks.

---

[8] See http://www.section508.gov/index.html, and
[9] Web content accessibility guidelines 1.0. 5 May 1999. World Wide Web Consortium. 27 April 2001.
<http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/ >.

In light of these facts, this study looks at the percentage of Websites currently on the Internet that would be accessible to those considered disabled under the Americans with Disabilities Act. It also evaluates which types of errors caused most sites to fail or pass.

Literature Review

Outside of the "why should I do it?" and "how can I do it" genres for Website accessibility literature, there is actually very little documentation on whether or not these recommendations are being taken into consideration. Surprising as this might seem, since it seems to be clearly confirmed that companies will have to comply with ADA standards on their Websites, it turns out that the most common assumption for this lack of data is that these standards are just too new.[10]

Andrew Jackson's Web Page Design: A Study of Three Genres[11] looks at three genres of Websites (education, government, and shopping) and makes comparisons of their design elements. Part of his comparison focuses on ADA accessibility. In the 45 Websites he evaluated (15 from each genre), only about half of the education websites (46.7%) and government websites (53.3%) met Bobby approval for accessibility. Zero of the shopping sites he evaluated earned Bobby approval.

The Web Usability Index (WUI), a "freely accessible Web usability statistics database," publishes daily the percentage of 50,000 random sites that are evaluated for accessibility and usability by type.[12] As researched on April 23, 2001, only 8% of the total sites evaluated, received an "excellent" rating based on the number of problems found and the severity of the

---

[10] Axel Schmetzke, "Web Accessibility at University Libraries and Library Schools." Library Hi Tech 19.1 (2001): 39.

[11] Andrew Jackson, "Web Page Design: A Study of Three Genres," Master's paper, UNC-Chapel Hill, 1999.

[12] "What is the Web Usability Index?" UsableNet. 23 April 2001 <www.usablenet.com/wui/wui_index.html>.

problem, 11% received a rating of "good," 31% received a rating of fair, and 50% received a rating of "poor."

One of the most interesting studies consulted in this project is Axel Schmetzke's <u>Web Accessibility at University Libraries and Library Schools</u>.[13] In his research, Schmetzke looked at the 24 highest ranked Schools of Library and Information Science according to the <u>US New & World Report</u>, and evaluated the department Websites and the university's main library Web page for accessibility. Using the Bobby software, he found that only 23% of the SLIS pages were approved and 59% of the main libraries were approved. His conclusions for such a low result were that these schools are "unlikely to teach principles of accessible Web design."[14]

Another more recent study, also done by Schmetzke, evaluated the University of Wisconsin's thirteen campuses for Webpage accessibility over three years (1999, 2000, 2001) on three sets of Webpages: general campus pages, library pages, and academic department pages.[15] Using Bobby, Schmetzke found that over this three year period ending in 2001, the Website accessibility percentages increased, but that the numbers of accessible pages are still low. The campus pages went from 48% in 1999, to 43% in 2000, to 52% in 2001. The library pages went from 31% in 1999, to 40% in 2000, to 43% in 2001. The academic department pages went from 27% in 1999 to 32% in 2001 (data for the year 2000 was not collected).

A study evaluating the main academic library Web pages of 100 colleges found that only 40 out of the 100 tested were rated accessible. This study, <u>Wired But Not Connected: Accessibility of Academic Library Home Pages</u>, conducted by Erica B. Lilly and Connie Van Fleet, also used the Bobby software to evaluate their sites chosen from Yahoo's 1998 list of the

---

[13] Schmetzke 35-49.
[14] Schmetzke, 42.
[15] <u>Web Page Accessibility of University of Wisconsin Campuses: 2001 Survey Data</u>. March/April 2001. Axel Schmetzke. 27 April 2001. <http://www.library.uwsp.edu/aschmetz/Accessible/uw-campuses/Survey2001/contents2001.htm>

"100 Most Wired Colleges."[16] These findings, like the findings of the other studies, seem to point to either a complete disregard to the issues the ADA has raised about persons with disabilities having the right for full access to the Web, or as assumed by scholars watching the progression of compliance, that the issue is still too new and therefore unknown to Website designers.

Based on the guidelines that are now being applied to government sites, it is likely that the ADA will soon be applied to commercial Websites. Some work has been done in evaluating the accessibility of educational domains, however the authors of this study are interested in the accessibility status of other domains in order to get a picture of the status of the internet as a whole. This study gives a context for greater education and awareness in designing for accessibility and total population use.

Methodology

Scope and Sampling

This study utilizes Bobby (see "Evaluation Software") to assess the accessibility of Websites in the following six categories: overall most visited, clothing, international, jobs, college, and government. With the exception of government, the samples for each category were derived from a Website called 100hot (http://www.100hot.com). This online directory ranks the Internet's most visited sites by category, with each category containing fifty to one hundred sites. Every category selected for this study contained one hundred sites except for clothing, which contained fifty sites. Only forty-nine of the fifty clothing sites successfully ran through Bobby. Therefore, n=549. See Appendix B for the detailed list of sites tested by Bobby.

---

[16] Lilly and Fleet 14.

100hot's daily data collection targets more than 100,000 Web users each month. Only single page views are tracked, and data locations include businesses, universities, and home users. Almost 60 percent of those sampled are in North America, but exact demographics are not available to protect user privacy. 100hot does not disclose its data sources for competitive reasons. The rankings are updated every week on Thursdays.

Federal government websites are not ranked by 100hot. The authors of this study wished to examine the accessibility of online government information in addition to the other types of information selected. Therefore, a sample of government sites was created from the U.S. Federal Government Agencies Directory compiled by Louisiana State University Libraries (http://www.lib.lsu.edu/gov/fedgovall.html). The Directory contains active U.S. federal government agencies that are represented in the United States Government Manual. The extensive listing includes agencies of the following types: executive; judicial; legislative; independent; boards, committees, commissions; and quasi-official. The indented arrangement of the Directory indicates an institution's place in government hierarchy.

A simple random sample of one hundred government sites was created from the first two levels of hierarchy displayed in the Directory (a total of 295 sites). The utilization of only the first two levels limited the possibility of including sub-agency sites within the sample, an important factor for creating a consistent format with the other samples. The sample was generated with the aid of a table of random numbers.[17]

Evaluation Software

The most current downloadable version of Bobby, v3.2, determined site accessibility. Bobby is a tool that analyzes the accessibility of web pages for people with disabilities   It was

---

[17] Earl Babbie, <u>The Practice of Social Research</u>. 7th ed. Belmont: Wadsworth Publishing, 1995. A25-26.

created by a non-profit organization called CAST, or the Center for Applied Special Technology. Bobby bases its accessibility analyses on the World Wide Web Consortium's (W3C) Web Accessibility Initiative (WAI) Web Content Accessibility Guidelines. The software checks for accessibility errors, and generates a report detailing the number, type, and location of the errors. In this study, Bobby was set to check only the first layer of each site, not the subsequent layers of hyperlinked pages.

There are several different "priority levels" for errors, but the "Priority 1" errors are the ones that determine whether or not a site receives Bobby approval. When a site contains any Priority 1 errors, it does not receive Bobby approval. The software cannot check every W3C-WAI compliance guideline automatically, so it recommends that the user manually check some attributes. Such manually-checked attributes are termed "user checks" and are triggered by something specific on the page. If a site does not contain any user checks, then it can display the Bobby-approved icon.

This study recorded three types of information for each site: Bobby approval or disapproval; Priority 1 errors, if any; and user checks, if relevant. Priority 1 errors were recorded for sites that did not pass Bobby's automatic check, but user checks were not recorded. User checks were only recorded for sites that passed Bobby's automatic check. Each *instance* of an error or user check in the sites was not recorded. Instead, the authors noted the number of sites in which the error(s) or check(s) occurred.

Bobby is a useful tool for testing a large number of Websites for accessibility. However, the software has some limitations. It cannot automatically analyze scripts, cascading style sheets, or secure Websites.[18] As Schmetzke notes, Bobby may also occasionally produce false

---

[18] "Troubleshooting." Manual for Downloadable Version.
<http://www.cast.org/Bobby/ManualforDownloadable622.cfm>

positive or false negative results.[19] Bobby also does not check text-only versions for accessibility or existence. Text-only versions and their accessibility was not considered in this study due to the desire for a large sample size that could be more easily generalized as representative of the Internet as a whole. Still, Bobby has been the tool of choice for several Web accessibility studies (Flowers et al.,[20] Lilly and Van Fleet, Schmetzke), and proved to be the most appropriate choice for the scope of this study.

Results

The percentage of tested Websites that passed without Priority 1 errors, but may still have had user checks, was 33.9. 66.1% of the total evaluated sites failed (see Table 1). The Government sites had the highest percentage of sites passing the automatically checked portion (60%), and the sites deemed Overall Most Popular had the poorest showing with 15% passing this same section. These data show that ADA compliance is a significant issue in Website accessibility, an issue which needs to be widely addressed.

The total number of sites that passed without any user checks (i.e., completely Bobby-approved) was 33, which equals 6% of our sample of 549 sites. When looking at the categories of sites, the International sites had the best Bobby-approval rate with 11% passing, and the Government sites the worst with 1 % passing. It is important to remember at this point, however, that just because user checks are triggered does not necessarily mean that they apply.[21] Therefore, it is possible that the Government sites had the best overall approval rate.

---

[19] Schmetzke 6.
[20] C.P. Flowers, M. Bray, and R.F. Algozzine, "Accessibility of Special Education Program Home Pages." <u>Journal of Special Education Technology</u> 14 (1999): 21-6.
[21] It was outside the scope of this study to determine whether user checks actually applied to each site where they were triggered.

In terms of individual types of Priority 1 errors, the most common error was "not providing alternative text for images" (see Table 3), followed closely by "frame problems." In looking at user checks (see Appendix A), the most common type of check was "If you use color to convey information, make sure the information is also represented another way," followed by "If an image conveys important information beyond what is in its alternative text, provide an extended description" (see Table 4).

Table 1: **Numbers/Percentages of Bobby Approved/Failed Websites:**

Category:	Number (%) Passed without Priority 1 Errors:	Number (%) Failed:	Number Tested:
Government Sites	60 (60%)	40 (40%)	100
College Sites	43 (43%)	57 (57%)	100
Clothing Sites	20 (40%)	29 (60%)	49
International Sites	29 (29%)	71 (71%)	100
Job Sites	19 (19%)	81 (81%)	100
Overall Most Popular Sites	15 (15%)	85 (85%)	100
Total:	**186 (33.9%)**	**363 (66.1%)**	**549**

Table 2: **Number of Websites that Passed without Priority 1 Errors, with and without User Check Problems**

Category:	Number Passed with User Check Problems	Number Passed without User Check Problems
Government Sites	59	1
College Sites	40	3
Clothing Sites	11	9
International Sites	18	11
Job Sites	12	7
Overall Most Popular Sites	13	2
Total (% out of 549 sites):	**153 (27.9%)**	**33 (6%)**

Table 3: **Priority 1 Errors**

	Number of Priority 1 Errors For:						
Priority 1 Error Type:	Govern-ment sites	College sites	Clothing sites	International sites	Job sites	Overall Most Popular sites	Total (for 549 sites).
Provide alternative text for all images	33	50	24	62	72	75	316
Provide alternative text for all image map hot-spots.	4	17	6	10	10	22	69
Provide alternative text for all image-type buttons in forms	2	7	12	9	8	18	56
Each frame must reference an HTML file.	0	1	0	2	14	19	36
Give each frame a title.	4	2	6	21	22	24	79
Provide alternative text for each APPLET.	0	1	0	0	1	4	6

Table 4: **Total Number of User Checks for All Web Site Categories**

User Checks:	
1. If an image conveys important information beyond what is in its alternative text, provide an extended description.	128
2. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.	122
3. If you use color to convey information, make sure the information is also represented another way.	137
4. Be sure pages are readable and usable if style sheets are ignored.	74
5. For tables not used for layout (for example, a spreadsheet), identify headers for the table rows and columns.	99
6. Provide alternative content for each SCRIPT that conveys important information or functionality.	71
7. Make sure pages are still usable if programmatic objects do not function.	13
8. Make sure that the page does not cause the screen to flicker rapidly.	3
9. ALT text>150 characters, consider providing a separate description.	3
10. If the submit button is used as an image map, use separate buttons for each active region.	14
11.Make sure programmatic objects do not cause the screen to flicker.	5
12. Do you have a descriptive (D) link in addition to LONGDESC?	1
13. Provide accessible alternatives to the information in scripts, applets, or objects.	5
14. Provide text links for all server-side image map hot-spots.	2
15. Use a client-side image map instead of a server-side image map.	2
16. Do all audio files have transcripts?	1
17. None found.	33

Conclusion

A majority (66.1%) of the Websites evaluated in this study failed accessibility testing. This implies that much of the Internet is not accessible to a significant proportion of the population. The majority of triggered errors have no affect on site design, and in fact most Priority 1 and user check errors are easy to fix, and several websites offer advice on doing so.[22] The errors that do impact design can be replicated in the HTML a different way. It can be assumed that more legal action will be taken in high-profile cases, and a more precise interpretation of the law will be forthcoming.

Further research into this area would include looking at the lower levels of sites that passed. While it is important to have accessible pages on the top level of a major website, it is equally important that all subsequent pages are accessible. Other research could include impact of education efforts on site design, looking at the user checks as they actually apply to each site, and taking text only versions into consideration. There are also other Bobby-like sites available, including WAVE (Web Accessibility Versatile Evaluator) at http://www.temple.edu/inst_disabilities/piat/wave/. WAVE does not generate a report like Bobby, but does work with the GUI interface (versus the HTML). Another option is A-Prompt (Accessibility Prompt), http://aprompt.snow.utoronto.ca/, developed jointly by the University of Toronto and the University of Wisconsin. A-Prompt makes recommendations to Webmasters to help them fix their accessibility issues. Replicating this study with these other tools may yield different results, which may prove to be an interesting comparison to the findings of this study as well as others.

---

[22] The World Wide Web Consortium's Web Accessibility Initiative <http://www.w3.org>.

Appendix A:

Tables of Results

Appendix A

Overall Most Popular Web Sites from http://www.100hot.com 4/02/01 as run through http://www.cast.org/bobby.

Does not meet Bobby Priority 1 requirements because:	Number[1]
1. Provide alternative text for all images.	75
2. Provide alternative text for all image map hot-spots.	22
3. Provide alternative text for all image-type buttons in forms.	18
4. Each FRAME must reference an HTML file.	19
5. Give each frame a title.	24
6. Provide alternative text for each APPLET.	4

User Checks:	Number
1. If an image conveys important information beyond what is in its alternative text, provide an extended description.	11
2. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.	10
3. If you use color to convey information, make sure the information is also represented another way.	11
4. Be sure pages are readable and usable if style sheets are ignored.	7
5. For tables not used for layout (for example, a spreadsheet), identify headers for the table rows and columns.	8
6. Provide alternative content for each SCRIPT that conveys important information or functionality.	9
7. Make sure pages are still usable if programmatic objects do not function.	0

---

[1] Number conveys how many sites the Priority 1 error/user check occurred in.

Appendix A

User checks, cont.	Number
8. Make sure that the page does not cause the screen to flicker rapidly.	0
9. ALT text>150 characters, consider providing a separate description.	1
10. If the submit button is used as an image map, use separate buttons for each active region.	2
11. Make sure programmatic objects do not cause the screen to flicker.	0
12. Do you have a descriptive (D) link in addition to LONGDESC?	0
13. Provide accessible alternatives to the information in scripts, applets, or objects.	0
14. Provide text links for all server-side image map hot-spots.	0
15. Use a client-side image map instead of a server-side image map.	0
16. Do all audio files have transcripts?	0
17. None found.	2

Appendix A

Top-Ranked Clothing Web Sites from http://www.100hot.com 4/02/01 as run through http://www.cast.org/bobby.

Does not meet Bobby Priority 1 requirements because:	Number[2]
1. Provide alternative text for all images.	24
2. Provide alternative text for all image map hot-spots.	6
3. Provide alternative text for all image-type buttons in forms.	12
4. Each FRAME must reference an HTML file.	0
5. Give each frame a title.	6
6. Provide alternative text for each APPLET.	0

User Checks:	Number
1. If an image conveys important information beyond what is in its alternative text, provide an extended description.	3
2. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.	4
3. If you use color to convey information, make sure the information is also represented another way.	4
4. Be sure pages are readable and usable if style sheets are ignored.	1
5. For tables not used for layout (for example, a spreadsheet), identify headers for the table rows and columns.	2
6. Provide alternative content for each SCRIPT that conveys important information or functionality.	8
7. Make sure pages are still usable if programmatic objects do not function.	1

---

[2] Number conveys how many sites the Priority 1 error/user check occurred in.

Appendix A

User checks, cont.	Number
8. Make sure that the page does not cause the screen to flicker rapidly.	1
10. ALT text>150 characters, consider providing a separate description.	0
10. If the submit button is used as an image map, use separate buttons for each active region.	0
12. Make sure programmatic objects do not cause the screen to flicker.	0
18. Do you have a descriptive (D) link in addition to LONGDESC?	0
19. Provide accessible alternatives to the information in scripts, applets, or objects.	0
20. Provide text links for all server-side image map hot-spots.	0
21. Use a client-side image map instead of a server-side image map.	0
22. Do all audio files have transcripts?	0
23. None found.	9

Appendix A

Top-Ranked College Web Sites from http://www.100hot.com 4/02/01 as run through http://www.cast.org/bobby.

Does not meet Bobby Priority 1 requirements because:	Number[3]
1. Provide alternative text for all images.	50
2. Provide alternative text for all image map hot-spots.	17
3. Provide alternative text for all image-type buttons in forms.	7
4. Each FRAME must reference an HTML file.	1
5. Give each frame a title.	2
6. Provide alternative text for each APPLET.	1

User Checks:	Number
1. If an image conveys important information beyond what is in its alternative text, provide an extended description.	33
2. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.	30
3. If you use color to convey information, make sure the information is also represented another way.	37
4. Be sure pages are readable and usable if style sheets are ignored.	27
5. For tables not used for layout (for example, a spreadsheet), identify headers for the table rows and columns.	24
6. Provide alternative content for each SCRIPT that conveys important information or functionality.	19
7. Make sure pages are still usable if programmatic objects do not function.	4

---

[3] Number conveys how many sites the Priority 1 error/user check occurred in.

Appendix A

User checks, cont.	Number
8. Make sure that the page does not cause the screen to flicker rapidly.	2
9. ALT text>150 characters, consider providing a separate description.	2
10. If the submit button is used as an image map, use separate buttons for each active region.	9
11.Make sure programmatic objects do not cause the screen to flicker.	0
12. Do you have a descriptive (D) link in addition to LONGDESC?	0
13. Provide accessible alternatives to the information in scripts, applets, or objects.	1
14. Provide text links for all server-side image map hot-spots.	1
15. Use a client-side image map instead of a server-side image map.	1
16. Do all audio files have transcripts?	1
17. None found.	3

Sample of Government Web Sites from http://www.lib.lsu.edu/gov/fedgovall.html 4/02/01 as run through http://www.cast.org/bobby.

Does not meet Bobby Priority 1 requirements because:	Number[4]
1. Provide alternative text for all images.	33
2. Provide alternative text for all image map hot-spots.	4
3. Provide alternative text for all image-type buttons in forms.	2
4. Each FRAME must reference an HTML file.	0
5. Give each frame a title.	4
6. Provide alternative text for each APPLET.	0

User Checks:	Number
1. If an image conveys important information beyond what is in its alternative text, provide an extended description.	55
2. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.	52
3. If you use color to convey information, make sure the information is also represented another way.	57
4. Be sure pages are readable and usable if style sheets are ignored.	23
5. For tables not used for layout (for example, a spreadsheet), identify headers for the table rows and columns.	40
6. Provide alternative content for each SCRIPT that conveys important information or functionality.	21
7. Make sure pages are still usable if programmatic objects do not function.	6

---

[4] Number conveys how many sites the Priority 1 error/user check occurred in.

Appendix A

User checks, cont.	Number
8. Make sure that the page does not cause the screen to flicker rapidly.	0
10. ALT text>150 characters, consider providing a separate description.	0
10. If the submit button is used as an image map, use separate buttons for each active region.	3
11.Make sure programmatic objects do not cause the screen to flicker.	3
13. Do you have a descriptive (D) link in addition to LONGDESC?	1
18. Provide accessible alternatives to the information in scripts, applets, or objects.	3
19. Provide text links for all server-side image map hot-spots.	1
20. Use a client-side image map instead of a server-side image map.	1
21. Do all audio files have transcripts?	0
22. None found.	1

Appendix A

Top-Ranked Job Web Sites from http://www.100hot.com 4/02/01 as run through http://www.cast.org/bobby.

Does not meet Bobby Priority 1 requirements because:	Number[5]
1. Provide alternative text for all images.	72
2. Provide alternative text for all image map hot-spots.	10
3. Provide alternative text for all image-type buttons in forms.	8
4. Each FRAME must reference an HTML file.	14
5. Give each frame a title.	22
6. Provide alternative text for each APPLET.	1

User Checks:	Number
1. If an image conveys important information beyond what is in its alternative text, provide an extended description.	8
2. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.	9
3. If you use color to convey information, make sure the information is also represented another way.	10
4. Be sure pages are readable and usable if style sheets are ignored.	7
5. For tables not used for layout (for example, a spreadsheet), identify headers for the table rows and columns.	9
6. Provide alternative content for each SCRIPT that conveys important information or functionality.	11
7. Make sure pages are still usable if programmatic objects do not function.	2

---

[5] Number conveys how many sites the Priority 1 error/user check occurred in.

Appendix A

User checks, cont.	Number
8. Make sure that the page does not cause the screen to flicker rapidly.	0
11. ALT text>150 characters, consider providing a separate description.	0
10. If the submit button is used as an image map, use separate buttons for each active region.	0
11.Make sure programmatic objects do not cause the screen to flicker.	2
14. Do you have a descriptive (D) link in addition to LONGDESC?	0
23. Provide accessible alternatives to the information in scripts, applets, or objects.	1
24. Provide text links for all server-side image map hot-spots.	0
25. Use a client-side image map instead of a server-side image map.	0
26. Do all audio files have transcripts?	0
27. None found.	7

Appendix A

Top-Ranked International Web Sites from http://www.100hot.com 4/02/01 as run through http://www.cast.org/bobby.

Does not meet Bobby Priority 1 requirements because:	Number[6]
1. Provide alternative text for all images.	62
2. Provide alternative text for all image map hot-spots.	10
3. Provide alternative text for all image-type buttons in forms.	9
4. Each FRAME must reference an HTML file.	2
5. Give each frame a title.	21
6. Provide alternative text for each APPLET.	0

User Checks:	Number
1. If an image conveys important information beyond what is in its alternative text, provide an extended description.	18
2. If a table has two or more rows or columns that serve as headers, use structural markup to identify their hierarchy and relationship.	17
3. If you use color to convey information, make sure the information is also represented another way.	18
4. Be sure pages are readable and usable if style sheets are ignored.	9
5. For tables not used for layout (for example, a spreadsheet), identify headers for the table rows and columns.	16
6. Provide alternative content for each SCRIPT that conveys important information or functionality.	3

---

[6] Number conveys how many sites the Priority 1 error/user check occurred in.

Appendix A

User checks, cont.	Number
7. Make sure pages are still usable if programmatic objects do not function.	0
8. Make sure that the page does not cause the screen to flicker rapidly.	0
12. ALT text>150 characters, consider providing a separate description.	0
10. If the submit button is used as an image map, use separate buttons for each active region.	0
11. Make sure programmatic objects do not cause the screen to flicker.	0
15. Do you have a descriptive (D) link in addition to LONGDESC?	0
28. Provide accessible alternatives to the information in scripts, applets, or objects.	0
29. Provide text links for all server-side image map hot-spots.	0
30. Use a client-side image map instead of a server-side image map.	0
31. Do all audio files have transcripts?	0
32. None found.	11

Appendix B:

Lists of Web Sites Evaluated

Appendix B

Overall Most Popular Web Sites from www.100hot.com as of 4/2/01

1. www.yahoo.com
2. www.microsoft.com
3. www.lycos.com
4. www.aol.com
5. www.go.com
6. www.google.com
7. www.altavista.com
8. www.excite.com
9. www.chek.com
10. www.fortunecity.com
11. www.cnn.com
12. www.ebay.com
13. www.everyone.net
14. www.looksmart.com
15. www.nbci.com
16. www.usa.net
17. www.adbutlet.com
18. www.softseek.com
19. www.amazon.com
20. www.cnet.com
21. www.gator.com
22. www.sportsline.com
23. www.wwf.com
24. www.snowball.com
25. www.homestead.com
26. www.quote.com
27. www.napster.com
28. www.passport.com
29. www.mtnsms.com
30. www.mail.com
31. www.internet.com
32. www.efront.com
33. www.cnnemportugues.com
34. www.ugo.com
35. www.eudoramail.com
36. www.zdnet.com
37. www.weather.com
38. www.spedia.net
39. www.macromedia.com
40. www.tucows.com
41. www.haansoft.com
42. www.monster.com
43. www.about.com
44. www.developer.com
45. www.nai.com
46. www.windowsmedia.com
47. www.nodak.edu
48. www.sun.com
49. www.targetnet.com
50. www.forextrading.com
51. www.terra.com
52. www.burstnet.com
53. www.filepool.net
54. www.iwon.com
55. www.pathfinder.com
56. www.mp3.com
57. www.plasa.com
58. www.auctions.yahoo.com
59. www.webshots.com
60. www.oracle.com
61. www.friendfinder.com
62. www.indomoviez.com
63. www.delphi.com
64. www.mtv.com
65. www.sony.com
66. www.real.com
67. www.radioparadise.com
68. www.gohip.com
69. www.musicmatch.com
70. www.apple.com
71. www.webjump.com
72. www.bonzi.com
73. www.msnbc.com
74. www.xdrive.com
75. www.launch.com
76. www.cjb.net
77. www.bigmailbox.com
78. www.track4.com
79. www.w3.org
80. www.dialpad.com
81. www.clickagents.com
82. www.tvguide.com
83. www.nokia.com
84. www.adobe.com
85. www.freelotto.com
86. www.cometsystems.com
87. www.discovery.com
88. www.nasa.gov
89. www.hp.com
90. www.cisco.com
91. www.jackpot.com
92. www.nytimes.com
93. www.valueclick.com
94. www.headbone.com
95. www.optichat.com
96. www.web1000.com
97. www.napigator.com
98. www.lyrics.com
99. www.mircx.com
100. www.sap.com

Appendix B

Top Ranked Clothing Web Sites from www.100hot.com as of 4/2/01

1. www.nike.com
2. www.bluefly.com
3. www.abercrombie.com
4. www.gap.com
5. www.overstock.com
6. www.jcrew.com
7. www.landsend.com
8. www.macys.com
9. www.jcpenny.com
10. www.style.com
11. www.eddiebauer.com
12. www.llbean.com
13. www.saksfifthavenue.com
14. www.nordstrom.com
15. www.oldnavy.com
16. www.delias.com
17. www.bananarepublic.com
18. www.disney.store.go.com
19. www.rei.com
20. www.timberland.com
21. www.spiegel.com (bobby would not run)
22. www.patagonia.com
23. www.limited.com
24. www.girlshop.com
25. www.nautica.com
26. www.orvis.com
27. www.bloomingdales.com
28. www.tommy.com
29. www.kennethcole.com
30. www.fossil.com
31. www.umbro.com
32. www.fashionwindows.com
33. www.neimanmarcus.com
34. www.luxlook.com
35. www.pacificsunwear.com
36. www.clothestime.com
37. www.lizclaiborne.com
38. www.guyshop.com
39. www.jjill.com
40. www.dextershoe.com
41. www.paulfredrick.com
42. www.anthropologie.com
43. www.dkny.com
44. www.customatix.com
45. www.izod.com
46. www.purpleskirt.com
47. www.aeropostale.com
48. www.russellathletic.com
49. www.net-a-porter.com
50. www.clearplasic.com

Appendix B

Top-Ranked College Web Sites from www.100hot.com as of 4/02/01

1. www.nodak.edu
2. www.collegeclub.com
3. www.wisc.edu
4. www.snowball.com
5. www.berkeley.edu
6. www.alumni.net
7. www.umn.edu
8. www.mit.edu
9. www.nasa.gov
10. www.emory.edu
11. www.uchicago.edu
12. www.uiuc.edu
13. www.ucla.edu
14. www.arizona.edu
15. www.umd.edu
16. www.ricks.edu
17. www.ualberta.ca
18. www.msu.edu
19. www.sunysb.edu
20. www.umich.edu
21. www.stanford.edu
22. www.utah.edu
23. www.sc.edu
24. www.washington.edu
25. www.tamu.edu
26. www.colorado.edu
27. www.upenn.edu
28. www.cmu.edu
29. www.dailyjolt.com
30. www.vt.edu
31. www.purdue.edu
32. www.asu.edu
33. www.virginia.edu
34. www.psu.edu
35. www.maricopa.edu
36. www.utexas.edu
37. www.uakron.edu
38. www.usc.edu
39. www.yale.edu
40. www.uconn.edu
41. www.uga.edu
42. www.iit.edu
43. www.ucsb.edu
44. www.indiana.edu
45. www.uci.edu
46. www.udel.edu
47. www.iastate.edu
48. www.byu.edu
49. www.ohio-state.edu
50. www.nyu.edu
51. www.mathworks.com
52. www.hope.edu
53. www.caltech.edu
54. www.tulane.edu
55. www.duke.edu
56. www.ncsu.edu
57. www.unc.edu
58. www.rice.edu
59. www.wvu.edu
60. www.fsu.edu
61. www.rit.edu
62. www.rutgers.edu
63. www.harvard.edu
64. www.ucr.edu
65. www.nap.edu
66. www.princeton.edu
67. www.uiowa.edu
68. www.brown.edu
69. www.dartmouth.edu
70. www.orst.edu
71. www.nd.edu
72. www.buffalo.edu
73. www.uic.edu
74. www.ukans.edu
75. www.jhu.edu
76. www.gatech.edu
77. www.cuny.edu
78. www.okstate.edu
79. www.uoregon.edu
80. www.unl.edu
81. www.nevada.edu
82. www.msus.edu
83. www.si.edu
84. www.colostate.edu
85. www.usf.edu
86. www.wsu.edu
87. www.missouri.edu
88. www.wustl.edu
89. www.rpi.edu
90. www.utk.edu
91. www.ufl.edu
92. www.nscee.edu
93. www.ucsd.edu
94. www.syr.edu
95. www.rochester.edu
96. www.baylor.edu
97. www.poetry.com
98. www.gsu.edu
99. www.georgetown.edu
100. www.ucdavis.edu

Appendix B

Sample of Government Web Sites from www.lib.lsu.edu/gov/fedgovall.html as of 4/02/01

1. www.iaf.gov/iaf1.htm
2. www.ibb.gov/bbg/
3. www.his.gov
4. www.iie.org/fulbright
5. www.jusfc.gov/commissn/commissn.html
6. www.lsc.gov/index2.htm
7. www.stennis.gov
8. www.tda.gov
9. www.ostp.gov
10. www.pprc.gov
11. www.prc.gov/main.asp
12. www.samhsa.gov
13. www.supremecourtus.gov
14. www.usda.gov/oce/sdsf2/sdhome.htm#President's
15. www.usdoj.gov/eoir
16. www.usoge.gov
17. www.ussc.gov
18. www.usda.gov
19. www.usdoj.gov/usao/eousa
20. www.whitehouse.gov/cea/index.html
21. www.whitehouse.gov/government/eop-agencies.html
22. www.whitehouse.gov/nsc/index.html
23. www.whitehouse.gov/onap/index.html
24. www.fedlabs.org
25. www.ntsb.gov
26. www.abmc.gov
27. www.aoa.dhhs.gov
28. www.atf.treas.gov
29. www.cem.va.gov
30. www.cio.gov
31. www.compliance.gov/index.html
32. www.defenselink.mil
33. www.financenet.gov/aapc.htm
34. www.hud.gov/oig/oigindex.html
35. hydra.gsa.gov/staff/pa/whc.htm
36. www.mspb.gov
37. www.neh.fed.us
38. www.ngb.dtic.mil
39. www.noicc.gov
40. www.access-board.gov
41. www.cbo.gov
42. www.cia.gov
43. www.cns.gov
44. www.cpsc.gov
45. www.disa.mil/ncshome.html
46. www.dnfsb.gov
47. www.doc.gov
48. www.doi.gov

49. www.doi.gov/iacb
50. www.dol.gov
51. www.dol.gov/dol/asp
52. www.dol.gov/dol/ilab
53. www.dol.gov/dol/oasam
54. www.dol.gov/dol/ocfo
55. www.dol.gov/dol/pwba
56. www.dol.gov/dol/wb
57. www.ferc.fed.us
58. www.fletc.gov
59. www.fms.treas.gov
60. www.lcweb.loc.gov/flicc
61. www.msha.gov
62. www.ncjrs.org/oijcounc.htm
63. www.nsf.gov
64. www.ntia.doc.gov
65. www.oalj.dol.gov
66. refuges.fws.gov/FICMNEWFiles/FICMNEWHomePage.html
67. www.usdoj.gov/dea
68. www.usdoj.gov/criminal/criminal- home.html
69. www.sac.gov
70. www.ots.treas.gov
71. www.os.dhhs.gov
72. www.oig.dol.gov
73. www.uscg.mil
74. www.state.gov
75. www.ssa.gov
76. www.loc.gov
77. www.library.unt.edu/gpo/acir/acir.html
78. www.hud.gov
79. www.house.gov
80. www.hcfa.gov
81. www.fjc.gov
82. www.fema.gov
83. arts.endow.gov
84. www.uscg.mil/hq/uscga
85. www.ed.gov
86. www50.pcepd.gov/pcepd
87. www.whitehousedrugpolicy.gov
88 www.va.gov/oirm/CIO/default.asp
89. www.va.gov/cfo/default.htm
90. www.va.gov/OIG
91. www.ustreas.gov
92. www.ustr.gov
93. www.ustaxcourt.gov
94. www.usitc.gov
95. www.usip.org
96. www.usdoj.gov/ola/ola.html
97. www.usdoj.gov/oipr
98. www.usdoj.gov/oig/ighp01.htm
99. www.usdoj.gov/jmd
100. www.dot.gov

Appendix B

Top-Ranked International Web Sites from www.100hot.com as of 4/02/01

1. www.terra.es
2. www.lycos.com
3. www.nasa.gov
4. www.tucows.com
5. www.bbc.co.uk
6. www.sina.com
7. www.microsoft.com
8. www.aap.com.au
9. www.astaga.com
10. www.free.fr
11. www.lippostar.com
12. www.springer.de
13. www.yahoo.com
14. www.adlink.de
15. www.elpais.es
16. www.msn.fr
17. www.ozu.es
18. www.sold.com.au
19. www.eu.int
20. www.elsevier.com
21. www.wanadoo.nl
22. www.tripod.co.uk
23. www.ozemail.com.au
24. www.swipnet.se
25. www.tripod.fr
26. www.tudelft.nl
27. www.idg.es
28. www.anu.edu.au
29. www.guardianunlimited.co.uk
30. www.adpromoter.de
31. www.fly.to
32. www.spray.se
33. www.demon.co.uk
34. www.freeserve.co.uk
35. www.ic.ac.uk
36. www.mp3.com.au
37. www.tripod.it
38. www.wkap.nl
39. www.smh.com.au
40. www.co.za
41. www.msn.es
42. www.terra.com.br
43. www.fortunecity.co.uk
44. www.tpg.com.au
45. www.excite.es
46. www.adtech.de
47. www.telegraph.co.uk
48. www.respublica.fr
49. www.amazon.co.uk
50. www.gencat.es
51. www.canberra.edu.au
52. www.egroups.fr
53. www.fortunecity.es
54. www.afl.com.au
55. www.can.ac.uk
56. www.t-online.de
57. www.republika.com
58. www.ucl.ac.uk
59. www.wanadoo.es
60. www.excite.com
61. www.centrin.net.id
62. www.cuni.cz
63. www.terra.com.ar
64. www.csu.edu.au
65. www.pamedia.com.au
66. www.nomade.fr
67. www.wanadoo.fr
68. www.asus.com
69. www.libertysurf.fr
70. www.u-tokyo.ac.jp
71. www.theregister.co.uk
72. www.ncl.ac.uk
73. www.voila.fr
74. www.ox.ac.uk
75. www.adfa.oz.au
76. www.unam.mx
77. www.uchile.cl
78. www.sankei.co.jp
79. www.twist.sk
80. www.bom.gov.au
81. www.fortune.ru
82. www.lycos.es
83. www.club-internet.fr
84. www.stack.nl
85. www.telegraaf.nl
86. www.web.id
87. www.usyd.edu.au
88. www.in.gr
89. www.mediaindo.co.id
90. www.unimelb.edu.au
91. www.ed.ac.uk
92. www.tuwien.ac.at
93. www.newcastle.edu.au
94. www.hut.fi
95. www.bol.com.br
96. www.monash.edu.au
97. www.walla.co.il
98. www.xs4all.nl
99. www.catcha.co.id
100. www.asn.au

Appendix B

Top-Ranked Job Sites from www.100hot.com as of 4/02/01

1. www.monster.com
2. www.jobsdb.com
3. www.brainbench.com
4. www.jobsonline.com
5. www.hotjobs.com
6. www.flipdog.com
7. www.headhunter.net
8. www.nationjob.com
9. www.dice.com
10. www.jobs.com
11. www.vault.com
12. www.computerjobs.com
13. www.sixfigureincome.com
14. www.careerbuilder.com
15. www.collegegrad.com
16. www.guru.com
17. www.jobserve.com
18. www.summerjobs.com
19. www.hire.com
20. www.joboptions.com
21. www.wetfeet.com
22. www.ajb.dni.us
23. www.net-temps.com
24. www.careermag.com
25. www.softwarejobs.com
26. www.career.com
27. www.coolworks.com
28. www.jobbankusa.com
29. www.netjobs.com
30. www.jobscanada.com
31. www.jobweb.com
32. www.jobpilot.com
33. www.newscientistjobs.com
34. www.careerlab.com
35. www.brassring.com
36. www.myjobsearch.com
37. www.jobpilot.com
38. www.careercity.com
39. www.jobsleuth.com
40. www.1-jobs.com
41. www.overseasjobs.com
42. www.jobdirect.com
43. www.ejobs.com
44. www.bestjobsusa.com
45. www.planetrecruit.com
46. www.techies.com
47. www.jobmonkey.com
48. www.careercast.com
49. www.jobtrak.com
50. www.job.com
51. www.careerpath.com
52. www.taps.com
53. www.kforce.com
54. www.recruitersonline.com
55. www.jobasia.com
56. www.vaultreports.com
57. www.hcareers.com
58. www.careersite.com
59. www.construction.com
60. www.manpower.com
61. www.freetimejobs.com
62. www.navyjobs.com
63. www.recruitasia.com
64. www.cweb.com
65. www.myvisa.com
66. www.dbm.com
67. www.bridges.com
68. www.asset.ca
69. www.hopitalityonline.com
70. www.workavenue.com
71. www.helpwanted.net
72. www.careerexchange.com
73. www.assessment.com
74. www.resume.com
75. www.employmax.com
76. www.ceweekly.com
77. www.cashmailbox.com
78. www.cotelligent.com
79. www.londoncareers.net
80. www.collegerecruiter.com
81. www.totaljobs.com
82. www.hp.com
83. www.topjobusa.com
84. www.businesstown.com
85. www.peoplebank.com
86. www.bostonjobs.com
87. www.computerwork.com
88. www.gotajob.com
89. www.academploy.com
90. www.robinamerica.com
91. www.interec.net
92. www.resortjobs.com
93. www.interbiznet.com
94. www.mdtsc.com
95. www.engineeringjobs.com
96. www.adguide.com
97. www.helpwanted.com
98. www.accounting.com
99. www.4work.com
100. www.careerscolorado.com